

WHAT IS CLAIMED IS:

1.A hydraulic control apparatus comprising:

5 a solenoid valve including a valve portion and a solenoid portion, wherein the valve portion has a spool, and the solenoid portion is adapted to urge the spool in an axial direction by using electromagnetic force;

a valve body having a valve accommodation hole, the solenoid valve is arranged with respect to the valve body such that the valve portion is received in the valve accommodation hole; and

10 a fixing member which fixes the solenoid valve to the valve body, wherein the spool is formed so as to slidably fit in the valve accommodation hole, and the solenoid portion is disposed at an open end of the valve accommodation hole.

2.The hydraulic control apparatus according to claim 1, wherein:

15 the solenoid portion includes a plunger formed separately from the spool, and urges the spool by using the plunger; and

the fixing member detachably fixes the solenoid portion to the valve body.

3.The hydraulic control apparatus according to claim 1, further comprising:

20 a fitting projecting portion provided in one of the solenoid portion and the valve body; and

a fitting recessed portion provided in the other of the solenoid portion and the valve body,

25 wherein the fitting projecting portion and the fitting recessed portion engage with each other such that the solenoid portion and the valve accommodation hole are positioned concentrically with each other.

4.The hydraulic control apparatus according to claim 3, wherein:

the fitting projecting portion having an annular shape is provided concentrically in the opening portion of the valve accommodation hole, and is fitted in the fitting recessed portion having an annular shape and provided concentrically in an end portion of the solenoid portion, so as to position the valve accommodation hole and the solenoid portion concentrically with each other; and

5 the spool includes a positioning large-diameter portion that is located radially inwardly of a fitting portion of the fitting projecting portion and the fitting recessed portion, and the positioning large-diameter portion is slidably fitted in the valve accommodation hole, and is positioned concentrically with the valve accommodation hole.

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5. The hydraulic control apparatus according to claim 4, wherein the positioning large-diameter portion is slidably fitted in the vicinity of the opening portion of the valve accommodation hole so as to position the spool concentrically with the valve accommodation hole at a position that is the close to the solenoid portion.

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6. The hydraulic control apparatus according to claim 1, wherein the fitting projecting portion is press-fitted in the fitting recessed portion so that the solenoid portion is fixed to the valve body.

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7. The hydraulic control apparatus according to claim 1, wherein:

the valve body has a part accommodation hole formed separately from the valve accommodation hole, the part accommodation hole receives an assembly part; and

the solenoid portion is formed integrally with a flange that engages with the assembly part thereby to prevent the assembly part from being detached from the part accommodation hole.

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8. The hydraulic control apparatus according to claim 1, wherein the valve accommodation hole provided in the valve body is closed at one end thereof remote from the opening portion in

which the solenoid portion is provided, and a bottom of the valve accommodation hole at the one end is provided by a male screw received in the valve body.

5 9. The hydraulic control apparatus according to claim 1, wherein a diameter of the spool is constant, or decreases toward the solenoid portion.

10. The hydraulic control apparatus according to claim 1, wherein:
the fixing member comprises a snap-fastener including a body-side engaging portion that engages with the valve body, a solenoid-side engaging portion that engages with the solenoid portion, and an elastic deformable portion provided between the solenoid-side engaging portion and the body-side engaging portion, the elastic deformable portion being elastically deformed while the fixing member is mounted in place in the valve body; and
the snap-fastener presses the solenoid portion against the valve body by using elasticity of the elastically deformable portion.

15 11. The hydraulic control apparatus according to claim 1, wherein the fixing member comprises a threaded fastening member that detachably fixes the solenoid portion to the valve body.

20 12. A hydraulic control apparatus comprising:
a solenoid valve including a valve portion and a solenoid portion, wherein the valve portion has a spool, and the solenoid portion is adapted to urge the spool in an axial direction by using electromagnetic force;
a valve body having a valve accommodation hole, the solenoid valve is arranged with respect to the valve body such that the valve portion is received in the valve accommodation hole;
25 and
a fixing means which fixes the solenoid valve to the valve body,
wherein the spool is formed so as to slidably fit in the valve accommodation hole, and the solenoid portion is disposed at an open end of the valve accommodation hole.